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AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111  
Serial Number: 09/643,128  
Filing Date: August 21, 2000  
Title: Gene Inactivation by targeted DNA methylation

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Dkt: GMR-001

### IN THE CLAIMS

Please amend the claims as follows:

1. (currently amended) A polynucleotide capable of inducing methylation at a target nucleotide sequence comprising:  
an oligonucleotide imprinting element, wherein said imprinting element is double stranded and has a first strand and a second strand complementary to said first strand, said first strand comprising at least one m5CG sequence paired with an unmethylated CG sequence on said second strand or at least one m5CN1G sequence paired with an unmethylated CN2G sequence on said second strand, wherein N1 is any nucleotide, and N2 is a nucleotide that pairs with N1; and  
a single stranded oligonucleotide guiding element comprising at least one m5CG or at least one m5CN3G sequence, wherein N3 is any nucleotide and said guiding element is complementary to a target nucleotide sequence; and  
wherein said imprinting element and said guiding element are operably linked to form a polynucleotide capable of inducing methylation at said target nucleotide sequence.
2. (original) The polynucleotide of claim 1 wherein said first strand and said second strand of said imprinting element are linked through a covalent linkage.
3. (original) The polynucleotide of claim 2 wherein said first strand and said second strand of said imprinting element are linked by one or more nucleotide residues.
4. (original) The polynucleotide of claim 3 wherein said first strand and said second strand of said imprinting element are linked by a single thymidine residue.
5. (original) The polynucleotide of claim 1 wherein said first strand of said imprinting element comprises at least two m5CG sequences, two m5CN1G sequences, or one m5CG sequence and one m5CN1G sequence.
6. (original) The polynucleotide of claim 5 wherein said first strand of said imprinting element comprises the sequence: 5'-m5CGpN1m5CG-3'.

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19. (original) A composition comprising the polynucleotide of claim 1 and one or more additional components.
20. (original) The composition of claim 19 wherein said additional component is one that facilitates entry of the polynucleotide into a cell.
21. (original) The composition of claim 20 wherein said additional component comprises one or more lipids.
22. (original) The composition of claim 21 wherein said one or more lipids comprise the cationic lipids N-[1-(2,3-dioleoyloxy)propyl]-n,n,n-trimethylammonium chloride (DOTMA), dioleoyl posphatidylethanolamine (DOPE) and/or dioleoyl phosphatidylcholine (DOPC).
23. (original) The composition of claim 19 wherein said additional component is a physiologically acceptable carrier.
24. (original) A method for inducing methylation at a target nucleotide sequence in a cell comprising introducing the polynucleotide of claim 1 into a cell comprising said target nucleotide sequence, thereby inducing methylation at said target nucleotide sequence.
25. (original) The method of claim 24 wherein said cell is a mammalian cell, a plant cell, or a prokaryotic cell.
26. (original) The method of claim 25 wherein said cell is a human cell.
27. (original) The method of claim 24 wherein said polynucleotide is introduced into said cell *in vivo*.
28. (original) The method of claim 24 wherein said polynucleotide is introduced into said cell *ex vivo*.
29. (original) The method of claim 24 wherein said polynucleotide is introduced as a composition comprising a lipid.